Appendix I

FAA Integrated Noise Modeling (INM) 7.0

Aircraft noise surrounding an airport can cause an impact on a local community. This appendix presents the baseline noise levels, noise levels based on the alternatives presented in Appendix C, and also provides background information regarding noise characteristics and measurement. The noise evaluation was conducted for year 2010 and 2030 expected aircraft activity levels. Note that the "baseline" noise levels were generated using existing airport flight procedures, and do not consider any potential abatement procedures or other mitigation measures.

This chapter includes the following components:

- Aircraft Noise Overview
- Existing Conditions
- Future Conditions
- Noise Summary

I.1 Aircraft Noise Overview

This section provides a technical overview of the measurement of aircraft noise, common noise metrics, and federal land use compatibility guidelines.

I.1.1 Noise Measurement

Noise is defined as "unwanted sound." By this very definition, the perception of noise is a subjective process. Several factors, such as loudness, pitch (or frequency), and time variation, affect the actual level and quality of noise as perceived by the human ear. Each of these factors is outlined below.

The **loudness**, or magnitude, of noise determines intensity, and is measured in decibels (dB). The noise decibel is used to describe a large range of noise levels. For example, ambient noise ranges from 40 decibels (rustling of leaves) to over 70 decibels (truck pass-by) to over 100 decibels (rock concert), as illustrated in Table I-1. As the decibel is based on a logarithmic scale, a 10-decibel increase in noise level is generally perceived as a doubling of loudness, while a three-decibel increase in noise is just barely perceptible to the human ear.

Pitch describes the character and frequency content of noise. For example, noise may range from a very low-pitched "rumbling" noise from a stereo sub-woofer to mid-range traffic noise to very high-pitched whistling. Frequency is measured in hertz (Hz).

The **time variation** of noise sources can be characterized as continuous (e.g., building ventilation fan), intermittent (e.g., aircraft flyover), or impulsive (e.g., car backfire).

The A-weighted decibel reflects the human ear's response to audible frequencies, and is commonly used to describe the overall noise level from transportation sources. A-weighting accounts for the fact that humans do not hear low and high frequencies as well as middle frequencies. Overall, A-weighting measures noise in a way that closely resembles human hearing. As such, transportation studies use A-weighted metrics in their analysis.

For comparison purposes, typical A-weighted sound levels from common sources are shown in Table I-1.

TABLE I-1 – REPRESENTATIVE NOISE LEVELS

Source	Noise Level	Noise Effect
Breathing	0-10 dB	Threshold of Hearing
Whispering at 5 ft.	20 dB	Quiet, Rarely Distracting
Quiet office, library	40 dB	
Refrigerator	50 dB	
Large office	50 dB	Moderate Noise
Normal conversation	60 dB	
Vacuum cleaner	70 dB	Annoying
Garbage disposal	80 dB	Very Annoying
Power lawn mower	90 dB	
Motorcycle	100 dB	Potential Hearing Damage
Snow blower	105 dB	
Ambulance siren	110 dB	Hearing Damage
Concert	120 dB	
Firecracker	150 dB	Eardrum Rupture

One commonly-used noise metric in transportation studies is SEL:

- Sound Exposure Level (SEL): Total sound energy of an individual noise event, incorporating intensity, frequency, and duration. This measure is normalized to a referenced duration of one second, allowing events of different durations to be compared. In general, an outdoor SEL level is 20 to 30 dB higher than what would typically be from inside a building.

For single events that are longer in duration (e.g., several seconds to a minute), such as an aircraft operation, the peak noise can be better described using SEL. SEL describes the sound level experienced if all sound energy of an aircraft flyover occurred in just one second. Thus, SEL enables direct comparison of noise events that span different durations.

The above metric is useful in describing aircraft noise; however, the Day-Night Average Noise Level (DNL) metric (described below) is required for use in all airport noise studies, as it is the metric used by the FAA to determine "significant impacts."

- Day-Night Average Noise Level (DNL): Total accumulation of aircraft noise spread out uniformly throughout the day (i.e., over a 24-hour period). DNL is an annualized metric representing the noise of a typical day of the year. To compensate for the added annoyance created by nighttime aircraft activity, DNL adds a 10-decibel weighting (a "penalty") to night operations (between 10:00 pm and 7:00 am). The weighting incorporated in the metric equates one operation at night to 10 daytime operations.

Unlike the SEL, the DNL is an annualized average metric of 24-hour daily noise. It includes the noise of each repeated aircraft event during the day, which is known to influence annoyance, as well as the times when no activity is occurring. A location that experiences a noise level of 65 DNL may experience several daily events of over 100 SEL, mixed with lower level aircraft noise events, and many periods without aircraft activity. DNL provides a single-measure that account for all of this activity.

Federal regulations require the use of the DNL, rather than other noise metrics, to determine if aircraft noise impacts are "significant." The FAA uses a DNL of 65 dB to determine if non-compatible activities exist in the vicinity of an airport.

I.1.2 Land Use Compatibility

The FAA has adopted land use compatibility guidelines for preparing airport noise studies. These guidelines are presented in Table I-2.

As noted in the table, according to federal regulations, a DNL below 65 dB is considered to be compatible with all land uses. In comparison, noise levels between DNL 65 and 75 are considered incompatible with residential areas and schools, but compatible with other activities. Within the DNL 65 to 75 dB range, homes and schools could be insulated to achieve an outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB. However, in areas with a DNL over 75, residential land use is considered incompatible. DNL levels over 75 are also considered incompatible with hospitals, places of worship, and recreational activities. Table I-2 contains supporting notes that fully describe the federal compatibility guidelines.

Although a DNL below 65 is considered compatible with all land uses, this threshold does not imply public acceptance. The number of people who are annoyed by aircraft noise in a specific area varies. The level of annoyance depends on the time of day, the time of year, the activities of the people, the type and age of the dwellings occupied by those people, and in some cases, the actual visual sighting of aircraft. Some people are more perceptive and sensitive to sound. Thus, there is no "universally acceptable" minimum DNL. Residential noise complaints are common in locations as low as DNL 55 dB.

TABLE I-2 – FAA LAND USE COMPATIBILITY WITH DNL GUIDELINES				
Land Use	**DNL Levels (in dB)**			
	<65	**65-70**	**70-75**	**75-80**
RESIDENTIAL				
Residential, Other than Mobile Homes	Y	N[1]	N[1]	N
Mobile Home Parks	Y	N	N	N
Transient Lodgings	Y	N[1]	N[1]	N[1]
PUBLIC USE				
Schools	Y	N[1]	N[1]	N
Hospitals, & Nursing Homes	Y	25	30	N
Churches, Auditoriums & Concert Halls	Y	25	30	N
Government Services	Y	Y	25	30
Transportation	Y	Y	Y[2]	Y[3]
Parking	Y	Y	Y[2]	Y[3]
COMMERCIAL USE				
Offices, Business & Professional	Y	Y	25	30
Wholesale & Retail-Building Materials, Hardware & Farm Equipment	Y	Y	Y[2]	Y[3]
Retail Trade-General	Y	Y	25	30
Utilities	Y	Y	Y[2]	Y[3]
Communication	Y	Y	25	30
MANUFACTURING & PRODUCTION				
Manufacturing-General	Y	Y	Y[2]	Y[3]
Photographic & Optical	Y	Y	25	30
Agriculture (Except Livestock) & Forestry	Y	Y[6]	Y[7]	Y[3]
Livestock Farming & Breeding	Y	Y[6]	Y[7]	N
Mining & Fishing, Resource Production & Extraction	Y	Y	Y	Y
RECREATIONAL				
Outdoor Sports Arenas & Spectator Sports	Y	Y[5]	Y[5]	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N
Nature Exhibits & Zoos	Y	Y	N	N
Amusement Parks, Resorts & Camps	Y	Y	Y	N
Golf Courses, Riding Stables & Water Recreation	Y	Y	25	30

KEY:

Y (Yes): Land use and related structures compatible without restrictions.

N (No): Land use and related structures are not compatible and should be prohibited.

NLR: Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30 or 35: Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES:

[1]Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide and NLR of 20dB. Thus, the reduction requirements are often stated as 5, 10 or 15dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

[2]Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received; office areas, noise sensitive areas or where the normal noise level is low.

[3]Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received; office areas, noise sensitive areas or where the normal noise level is low.

[5]Land use compatible provided special sound reinforcement systems are installed.

[6]Residential buildings require NLR of 25.

[7]Residential buildings require NLR of 30.

Sources: FAA, FAR Part 150

I.2 Existing Conditions

A noise assessment was performed to determine the existing DNL noise levels for Ellington Airport in the base year of 2010. The FAA's Integrated Noise Model (INM) Version 7.0 was used to develop the DNL contours. The detailed model inputs and results of the noise assessment are described in the sections below.

I.2.1 Noise Model Inputs

The INM was developed by the FAA Office of Environment and Energy, with support from the John A. Volpe National Transportation Systems Center and ATAC Corporation. The INM Technical Manual is available from the FAA and describes the noise/time computation methodology employed by the model. The default values included in the INM employ flight profiles for aircraft at their maximum operating weights, and as such provided for a "worst case scenario" by default. This study utilized the standard INM aircraft profiles, power/thrust settings, and other performance parameters incorporated in the model.

The input data required for the INM include many operational components specific to the Airport. The required inputs were obtained through discussions with the airport owner, tenants, and a review of data provided by the FAA. These inputs include the following:

- Aircraft fleet mix
- Runway and aircraft flight track geometry
- Runway and flight track utilization
- Number and type of aircraft operations (departures and arrivals) by aircraft type
- Number of daytime (7 a.m. to 10 p.m.) aircraft operations
- Number of nighttime (10 p.m. to 7 a.m.) aircraft operations.

The aircraft fleet mix of operations at Ellington Airport consists of the following categories:

1) Single-engine piston general aviation aircraft
2) Multi-engine piston general aviation aircraft (future activity)
3) Helicopters
4) Ultralights (non-certified aircraft, not included in model)

The information provided below is based on 2010 operational data. As there is no airfield lighting, this model assumes that all activity is conducted during daytime hours.

Single-engine piston general aviation aircraft accounted for nearly 65 percent of the total aircraft activity at Ellington in 2010, the other 35 percent is made up of helicopters. Of these single-engine aircraft operations, 75 percent were considered regular operations (either one departure or one arrival) and 25 percent were touch & go operations. For INM modeling purposes, the Cessna 172 was selected to represent single-engine piston aircraft activity.

The helicopter category was modeled in INM using a Robinson-22 helicopter. These helicopter operations were modeled in INM mostly as touch & go operations due to the flight school operations, with some flights as arrival or departures.

Table I-3 summarizes the Airport's average annual daily operations by aircraft type for the 2010 existing conditions. Also included in Table I-3 is the aircraft identification code used for each aircraft type in the INM model. As shown, the Airport accommodated 66[1] average daily operations in 2010, which equals 24,086 total annual takeoffs and landings.

Runway and flight track utilization are a major part of the INM modeling analysis. At Ellington, aircraft operations were distributed between the two runway ends (Runway 1 and Runway 19). Runway 1 handles approximately 85% of the Airport's aircraft operations, while Runway 19 accounts for the remaining 15%. The high percentage of activity on Runway 1 is due to the prevailing northerly / northwesterly winds.

After aircraft operations were distributed by runway, designated aircraft flight tracks were determined. A flight track specifies the path along which aircraft travel during departure, arrival, or touch & go operations at or near the Airport. The shape of the flight track depends on many factors, such as aircraft destination, aircraft size and type, and avoidance of noise-sensitive areas. Table I-4 summarizes aircraft flight track utilization for piston aircraft and helicopter for both runway ends at Ellington. Figure I-1 illustrates flight tracks, including arrivals, departures, and touch and go operations, for non-helicopter aircraft procedures, while Figure I-2 shows flight tracks for helicopters. The helicopter flight tracks were based on discussions with the Northeast Helicopter, Inc.

TABLE I-3 – AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS 2010 EXISTING CONDITIONS

Aircraft		INM Code	Daily Aircraft Operations				
			Arrivals		Departures		Total
Type	**Name**		**Day**	**Night**	**Day**	**Night**	
Piston Aircraft Operations							
SE Piston	Cessna 172	CNA172	17.25	0	17.25	0	34.5
Helicopter Operations							
SE Piston	Robinson 22	R22	1.5	0	1.5	0	3
Touch & Go Aircraft and Helicopter Operations							
SE Piston	Cessna 172	CNA172	-	-	-	-	11.5
Helicopter	Robinson 22	R22	-	-	-	-	17
Touch & Go Operation Totals							28.5
Overall Airport Operation Totals			18.75	0	18.75	0	66

[1] 66 average daily operations do not include ultralight operations, which cannot be model within the FAA INM 7.0 program. Ultralights account for approximately 4 average daily operations.

I.2.2 Noise Analysis Results

DNL noise contours were generated for the 2010 existing daily operations using the aircraft data shown in Table I-3 and the flight tracks shown on Figures I-1 and I-2. The 55, 60, 65, 70, and 75 DNL noise contours are shown in Figure I-3. The 55 and 60 DNL contours are shown for informational purposes only, as all land uses are considered compatible with a DNL of less than 65 dB according to federal regulations (see Table I-2).

Figure I-4 shows the noise contours for the existing conditions without the helicopter activity. Due to aircraft departure activity from Runway 1, the 55 DNL contour extends to the north of the Airport within the existing property. When the helicopter activity is factored in (Figure I-3) the 55 DNL contour is widened at the Runway 1 end to encompass a portion of Bridge Street and Meadowbrook Apartments.

The 65 DNL contour extends beyond the property line to the south, over an area zoned for industrial uses and does not contain noise sensitive land uses. As such, the airport noise is considered compatible with the surrounding area according to federal regulations. Although it is compatible, it is not uncommon for any residential communities within the 55 DNL contour to lodge noise complaints from airport activity.

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AIRCRAFT FLIGHT PATHS Ellington Airport Acquisition Feasibility Study	PROJECT NO. 19818
	DATE: MAY 2010
	FIGURE I–1

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FLIGHT PATH – ARRIVAL

FLIGHT PATH – DEPARTURE

FLIGHT PATH – TOUCH & GO

N

0 400 800

Scale in feet

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HELIPORT FLIGHT PATHS

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FIGURE 1–2	

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Noise Contour with dB Level in DNL*

——— 60 ———

*DNL = Day-Night Average Noise Level

0 400 800
Scale in feet

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2010 EXISTING DNL NOISE CONTOURS
1,800' RUNWAY
(HELICOPTERS & FIXED-WING AIRCRAFT)
Ellington Airport Acquisition Feasibility Study

PROJECT NO. 19818

DATE: MAY 2010

FIGURE I-3

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Noise Contour with dB Level in DNL*

60

*DNL = Day-Night Average Noise Level

N

0 400 800

Scale in feet

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2010 EXISTING DNL NOISE CONTOURS
WITHOUT HELICOPTERS
1,800' RUNWAY

Ellington Airport Acquisition Feasibility Study

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FIGURE I-4

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I.3 Future Conditions

A noise assessment was also conducted to generate future DNL noise contours at Ellington. This assessment was performed to determine potential changes in airport noise due to increased aircraft operations, projected changes in aircraft fleet mix, and potential runway length alternatives. However, this analysis does not change the current flight paths. The results of the noise assessment for the 2030 future conditions are described below.

The potential alternatives include (see Appendix C for full description):

- Alternative 1 – No Build (maintain current conditions)
- Alternative 2 – Improved 1,800 foot runway in current location
- Alternative 3 – 2,000 foot runway, shifted to the northwest
- Alternative 4 – 2,500 foot runway, shifted and realigned to the northwest

I.3.1 Noise Model Inputs

Table I-4 summarizes the Airport's annual average daily operations by aircraft type for the 2030 future conditions. Also included in Table I-5 is the aircraft identification code used for each aircraft type in the INM model. Overall, it is anticipated that 2030 future condition aircraft operations will increase by approximately 11 percent over the 2010 existing conditions (based on the forecasts of this report). As shown, Ellington is anticipated to accommodate 74 average daily operations, equaling the 26,885 total annual takeoffs and landings in 2030.

Table I-5 summarizes the Airport's annual average daily operations by aircraft type for the 2030 growth scenario, which shows a growth of 23 percent. This scenario (see Chapter 2) assumes a multi-engine piston aircraft will be based at the Airport. These daily operations were used for the runway alternative of 2,500 feet (Alternative 4).

Runway and flight track utilization were assumed to be the same for both the 2010 existing conditions and the 2030 forecast conditions. Also, airport flight procedures, such as the percentage of daytime and nighttime aircraft operations, were are also assumed to remain the same in 2030. However, as discussed above, there are potential alternatives to the runway location and length. This analysis demonstrates the noise exposure for each alternative.

TABLE I-4 – AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS 2030 FORECAST CONDITIONS							
Aircraft		**INM Code**	**Daily Aircraft Operations**				
			Arrivals		**Departures**		**Total**
Type	**Name**		**Day**	**Night**	**Day**	**Night**	
Piston Aircraft Operations							
SE Piston	Cessna 172	CNA172	20.12	0	20.12	0	40.24
Helicopter Operations							
SE Piston	Robinson 22	R22	1.5	0	1.5	0	3
Touch & Go Aircraft and Helicopter Operations							
SE Piston	Cessna 172	CNA172	-	-	-	-	13.42
Helicopter	Robinson 22	R22	-	-	-	-	17
Touch & Go Operation Totals							30.42
Overall Airport Operation Totals			21.6	0	21.6	0	73.66

TABLE I-5 – AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS 2030 GROWTH CONDITIONS							
Aircraft		**INM Code**	**Daily Aircraft Operations**				
			Arrivals		**Departures**		**Total**
Type	**Name**		**Day**	**Night**	**Day**	**Night**	
Piston Aircraft Operations							
SE Piston	Cessna 172	CNA172	21.02	0	21.02	0	42.04
ME Piston	Beech Baron	BEC58P	0.74	0	0.74	0	1.48
Helicopter Operations							
SE Piston	Robinson 22	R22	1.8	0	1.8	0	3.6
Touch & Go Aircraft and Helicopter Operations							
SE Piston	Cessna 172	CNA172	-	-	-	-	14.02
Helicopter	Robinson 22	R22	-	-	-	-	20.4
Touch & Go Operation Totals							34.42
Overall Airport Operation Totals			23.56	0	23.56	0	80.06

I.3.2 Noise Analysis Results

DNL noise contours were generated for the future 2030 conditions (with no procedure modifications) at Ellington for each runway alternative. On each figure, the 55 and 60 DNL contours are shown for informational purposes only, as all land uses are considered compatible with a DNL of less than 65 dB.

The 55, 60, 65, 70, 75 and 80 DNL noise contours for a runway length of 1,800 feet (Alternative 2) are shown on Figure I-5. Even with the increased activity, the DNL contours almost remain in the same location, with only a slight growth to the north for the 55 and 60 DNL contours due to the 11 percent increase in activity. There are still no incompatible land uses within the 65 DNL.

Figure I-6 shows the DNL noise contours for a runway length of 2,000 feet (Alternative 3) that has been shifted to the northwest for design standard purposes. As between the 2010 and 2030 existing conditions noise contours, there is very little difference between the existing 2010 noise contours and the contours based on a runway of 2,000 feet. The 65 DNL contour does not extend as far south off the airport property with this alternative. There are still no incompatible land uses within the 65 DNL.

Figure I-7 shows the DNL noise contours for a runway length of 2,500 feet (Alternative 4). This alternative utilizes the growth forecast from Table I-5, which projects a 23 percent increase in activity rather than the 11 percent applied to the other alternatives. The 55 DNL contour extends further to the north, slightly enlarging the area on Bridge Street encompassed by the 55 DNL contour. This is due to the lengthening and realignment of the runway. There are still no incompatible land uses within the 65 DNL.

2010 Noise Contour with dB Level in DNL*

60

2030 Noise Contour with dB Level in DNL*

*DNL = Day-Night Average Noise Level

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2030 DNL NOISE CONTOURS
1,800' RUNWAY

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FIGURE I-5

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2010 Noise Contour with dB Level in DNL* —— 60 ——

2030 Noise Contour with dB Level in DNL* ---- 60 ----

*DNL = Day–Night Average Noise Level

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2030 DNL NOISE CONTOURS
2,000' RUNWAY

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FIGURE 1-6

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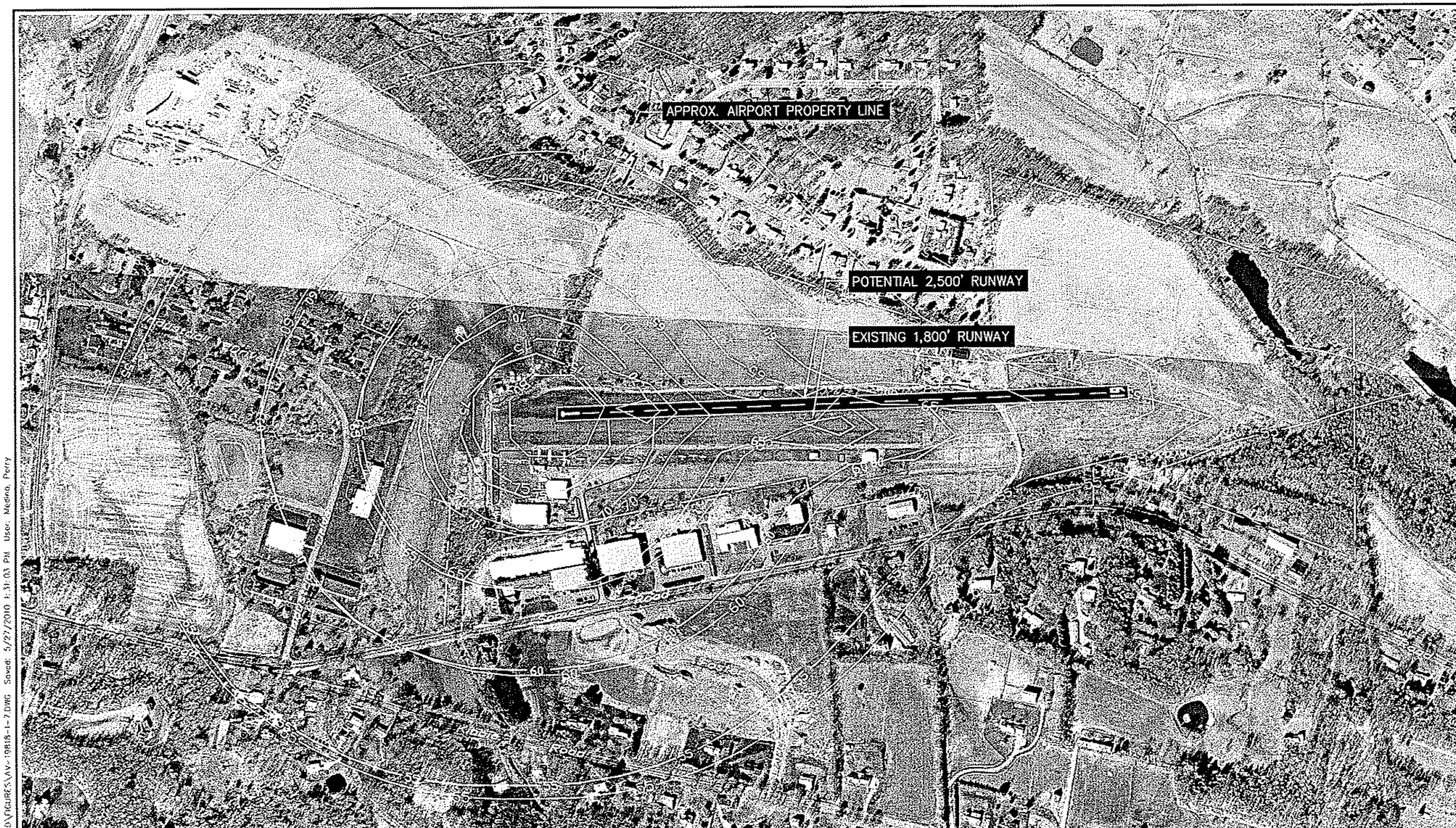

2010 Noise Contour with dB Level in DNL*

60

2030 Noise Contour with dB Level in DNL*

60

*DNL = Day-Night Average Noise Level

0 400 800

Scale in feet

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2030 DNL NOISE CONTOURS
2,500' RUNWAY

Ellington Airport Acquisition Feasibility Study

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FIGURE I-7

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I.4 Baseline Noise Summary

DNL noise contours were developed for the 2010 existing conditions and the 2030 future-baseline conditions. Based on FAA guidelines, which state that residential land uses are incompatible with DNL noise levels of 65 dB or higher, the following results were determined:

- For the 2010 existing conditions, no residential homes are located within the 65 DNL noise contour.
- For the 2030 future conditions for alternatives, no residential homes are located in the 65 DNL, under any of the forecast or runway alternatives.
- Existing and future noise levels are not substantially different. Thus, those currently agitated by the Airport will likely continued to be agitated, but additional complaints are not expected.

I.5 Grid Point Analysis

In order to provide a sample of specific noise levels at specific locations, a supplemental grid point analysis was conducted for 12 selected locations illustrated on Figure I-8. Table I-6 summarizes the DNL noise levels for the 12 selected locations for the various development alternatives; Table I-7 summarizes the SEL noise levels, described in Section 2.1.1.

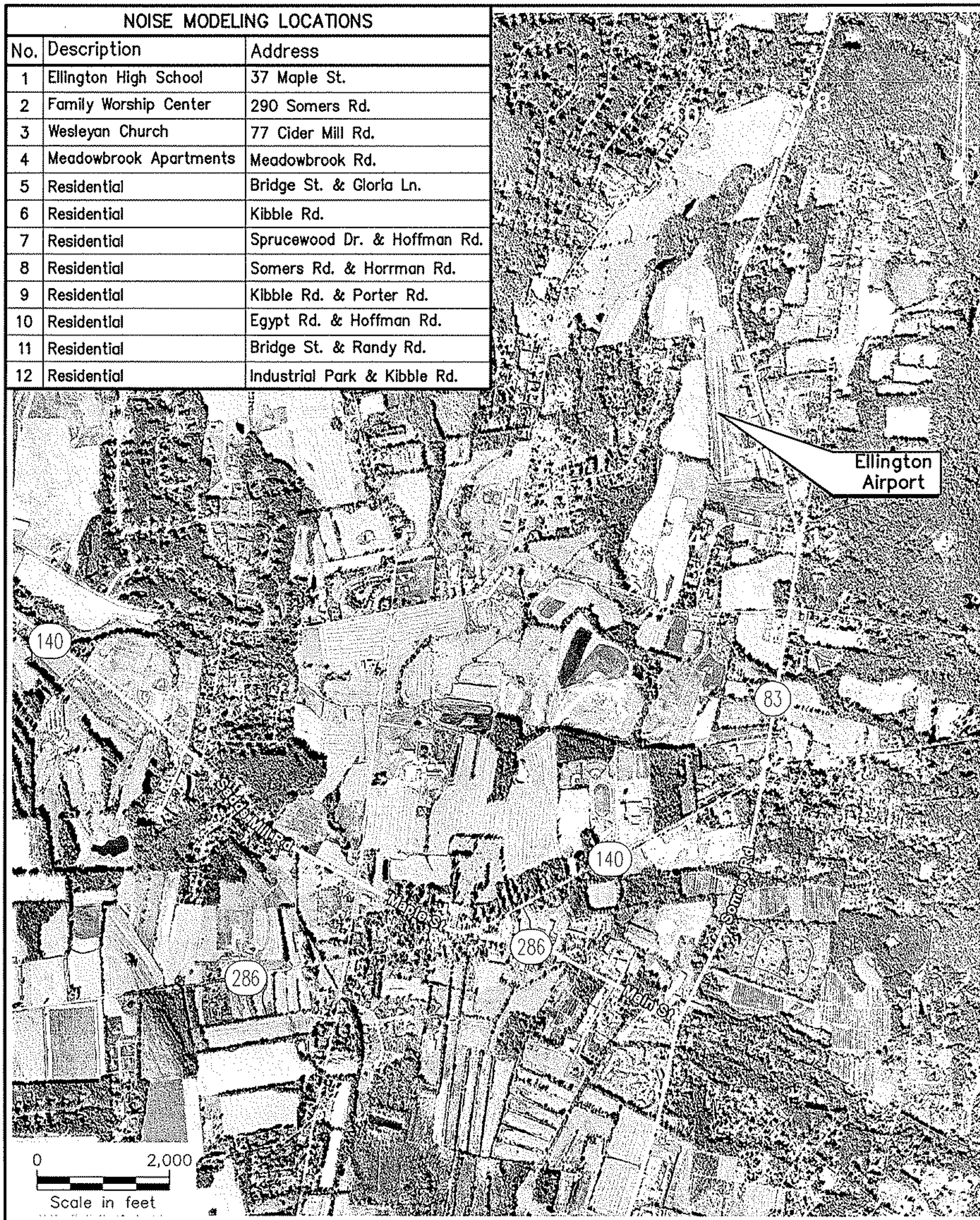
It should be noted that none of the selected locations are above DNL 65 dB, thus no noise impacts are present per FAA guidelines. For both DNL (average noise level) and SEL (peak noise level), there are only minor changes between 2010 and 2030 for the existing conditions at any of the locations. As the runway has been shifted to the northwest in Alternative 3, some locations experience a slightly increase in noise level while others experience a decrease. In Alternative 4, the minor realignment of the runway impacts select points as well. This is due to the minor changes in the approach and departure paths of the aircrafts as well as the actual point of aircraft touching down on the runway being further to the north.

TABLE I-6 – GRID POINT DNL NOISE LEVELS WITH HELICOPTERS

ID	Type / Name	Location	Existing Conditions 1,800' (Alt. 2)			2030 Forecast		2030 Growth Forecast	
			2010	2030	*Change*	2,000' (Alt. 3)	*Change*	2,500' (Alt. 4)	*Change*
1	Ellington High School	37 Maple St.	39.7	39.8	*0.1*	40.2	*0.4*	40.5	*0.7*
2	Family Worship Center	290 Somers Rd.	45.1	45.4	*0.3*	44.1	*-1.3*	46.5	*1.1*
3	Wesleyan Church	77 Cider Mill Rd.	42.7	42.9	*0.2*	42.3	*-0.6*	44.1	*1.2*
4	Meadowbrook Apartments	51 Meadowbrook Rd.	61.1	61.1	*0.0*	60.6	*-0.5*	61.9	*0.8*
5	Residential	Bridge St. & Gloria Ln.	53.7	53.8	*0.1*	54.3	*0.5*	55.1	*1.3*
6	Residential	Kibbe Rd.	50.6	50.8	*0.2*	51.5	*0.7*	51.4	*0.6*
7	Residential	Sprucewood Dr. & Hoffman Rd.	45.2	45.6	*0.4*	44.7	*-0.9*	47.7	*2.1*
8	Residential	Somers Rd. & Hoffman Rd.	41.0	41.4	*0.4*	42.3	*0.9*	41.6	*0.2*
9	Residential	Kibbe Rd. & Porter Rd.	49.1	49.2	*0.1*	49.2	*0.0*	50.0	*0.8*
10	Residential	Egypt Rd. & Hoffman Rd.	49.3	50.0	*0.7*	51.1	*1.1*	49.5	*-0.5*
11	Residential	Bridge St. & Randy Rd.	57.1	57.1	*0.0*	57.9	*0.8*	58.0	*0.9*
12	Residential	Industrial Park & Kibbe Rd.	56.5	56.5	*0.0*	55.8	*-0.7*	57.3	*0.8*

TABLE I-7 – GRID POINT SEL NOISE LEVELS WITH HELICOPTERS									
ID	Type / Name	Location	Existing Conditions 1,800' (Alt. 2)			2030 Forecast		2030 Growth Forecast	
			2010	2030	*Change*	2,000' (Alt. 3)	*Change*	2,500' (Alt. 4)	*Change*
1	Ellington High School	37 Maple St.	89.1	89.2	*0.1*	89.6	*0.4*	89.7	*0.5*
2	Family Worship Center	290 Somers Rd.	94.4	94.8	*0.4*	93.5	*-1.3*	96.0	*1.2*
3	Wesleyan Church	77 Cider Mill Rd.	92.1	92.2	*0.1*	91.7	*-0.5*	93.5	*1.3*
4	Meadowbrook Apartments	51 Meadowbrook Rd.	110.5	110.5	*0.0*	110.0	*-0.5*	110.7	*0.2*
5	Residential	Bridge St. & Gloria Ln.	103.1	103.2	*0.1*	103.6	*0.4*	104.9	*1.7*
6	Residential	Kibbe Rd.	100.0	100.2	*0.2*	100.9	*0.7*	101.0	*0.8*
7	Residential	Sprucewood Dr. & Hoffman Rd.	94.6	95.0	*0.4*	94.0	*-1.0*	97.2	*2.2*
8	Residential	Somers Rd. & Hoffman Rd.	90.4	90.7	*0.3*	91.7	*1.0*	91.0	*0.3*
9	Residential	Kibbe Rd. & Porter Rd.	98.5	98.5	*0.0*	98.6	*0.1*	99.4	*0.9*
10	Residential	Egypt Rd. & Hoffman Rd.	98.7	99.3	*0.6*	100.5	*1.2*	98.8	*-0.5*
11	Residential	Bridge St. & Randy Rd.	106.5	106.5	*0.0*	107.3	*0.8*	108.1	*1.6*
12	Residential	Industrial Park & Kibbe Rd.	105.9	105.9	*0.0*	105.2	*-0.7*	106.0	*0.1*

NOISE MODELING LOCATIONS		
No.	Description	Address
1	Ellington High School	37 Maple St.
2	Family Worship Center	290 Somers Rd.
3	Wesleyan Church	77 Cider Mill Rd.
4	Meadowbrook Apartments	Meadowbrook Rd.
5	Residential	Bridge St. & Gloria Ln.
6	Residential	Kibble Rd.
7	Residential	Sprucewood Dr. & Hoffman Rd.
8	Residential	Somers Rd. & Horrman Rd.
9	Residential	Kibble Rd. & Porter Rd.
10	Residential	Egypt Rd. & Hoffman Rd.
11	Residential	Bridge St. & Randy Rd.
12	Residential	Industrial Park & Kibble Rd.



CHA
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NOISE MODELING LOCATIONS

Ellington Airport Acquisition Feasibility Study

PROJECT NO. 19818

DATE: MAY 2010

FIGURE I-8